Memorandum

State of California

os**b**pd

"Equitable Healthcare Accessibility for California"

To:	California Healthcare Workforce Policy Commission	**Date:**	February 17, 2015

From: Debra Gonzalez, Research Program Specialist II
Healthcare Workforce Development Division
Office of Statewide Health Planning and Development

Subject: Registered Nurse Shortage Area Update

The results displayed in this report are from the Registered Nurse Shortage Area (RNSA) analysis completed in November 2014. The 2013 data used are from the Board of Registered Nursing (BRN) and the Office of Statewide Health Planning and Development (OSHPD).

Background

In February 2007, the California Healthcare Workforce Policy Commission (Commission) formally adopted the creation of a Registered Nurse Shortage Area (RNSA). The method for determining the RNSA is a function of the number of licensed nurses (supply) and patient volume (demand). The previous analysis performed used 2012 data and was on a county basis.

Final RNSA designation is determined when a county (1) lacks a general acute care hospital (GAC) and a long-term care (LTC) facility or (2) is above the mean ratio of available nurses to patient volume. The ratio is the total number of bed days for GACs, and LTC facilities multiplied by .08 and divided by the number of registered nurses (RNs) in the specific county. The mean is calculated by the sum of the ratio for each county divided by 58, the number of counties in California.

The counties with ratios greater than the mean are considered designated RNSAs. The Commission uses the RNSA as only one of many factors to determine Song-Brown funding for nursing education programs. The RNSA does not in itself determine funding or funding levels. In February 2008, the Commission stipulated that this method be reviewed annually, rather than every two years to provide insight into the latest science and current literature affecting the nursing workforce.

The Commission needs a quantitative, repeatable and meaningful way of ranking applications whose past graduates and training facilities operate in areas of unmet need (e.g. Song-Brown nursing shortages). The adopted RNSA, using counties as the analytical unit, serves well under this rubric.

Methodology

Three factors are used in defining nursing shortages: (1) California counties as the geographic unit of analysis, (2) California registered nurse data of all active licenses by county from the Board of Registered Nursing (BRN)[1], and (3) the patient day and census data from all LTCs and GACs from OSHPD.[2]

---

[1] Source: 2013, Department of Consumer Affairs, Board of Registered Nursing, County Projections for Clear Registered Nurse (RN) Licenses as of 12/31/13.
[2] Source: 2013, Office of Statewide Health Planning and Development, Healthcare Information Division (HID) Data Products. http://www.oshpd.ca.gov/HID/DataFlow/index.html

The BRN implemented a new computer system in October, 2013 hindering the ability to provide county clear license report for the entire 2013 calendar year. The counts of registered nurses with clear license by county received from the BRN were an estimate based on a baseline and 5 year trend analysis. Going forward, the BRN is working with the Department of Consumer Affairs to come up with accurate county count reports from their new system.

OSHPD maintains data on patient volume for GACs and LTCs. These data are maintained on the OSHPD Automated Licensing Information and Report Tracking System (ALIRTS) and available on the OSHPD website as data products. These GAC and LTC locations employ nearly 70% of the total nursing workforce in California. No current data exist on patient volume for the other 30% of the workforce.

OSHPD facility census[3] data for 2013 were obtained by county. There are more licensed bed days in LTCs than GACs in California and LTCs only account for 5% of the registered nurse workforce.[4] Therefore, a scale factor representing the percent of the nursing workforce at LTCs in this function was applied to ensure the census data were not skewed.[5] A total census was created by summing the two numbers and a ratio was used of census divided by registered nurses for each of the 58 counties.

Ratio Equation:
$$\frac{\sum (CensusDaysGAC + [(PatientDaysLTC) * 0.08])}{RNCount}$$
Where:

> CensusDaysGAC is the number of days a patient is occupying a bed in General Acute Care Hospitals in 2013

> PatientDaysLTC is the number of days a patient is occupying a bed in Long-Term Care Facilities in 2013

> RNCount is the number of licensed, active registered nurses per county in 2013

Limitations

This designation methodology has two limitations. First, only about 70% of the nursing workforce is accounted for in this formula. The remaining 30% of the workforce is employed at schools, home health agencies, and other facilities, for which no ratio of average daily census or population served, can be readily analyzed.[6] Second, nurses and patients both travel outside county boundaries to give and receive care.
However, we are unable to obtain data on commute patterns by occupation at this time due to confidentiality constraints regarding the release of healthcare providers' Social Security

---

[3] Census Day Totals are a measure of service delivery. This value is the sum of the number of days that a given bed was occupied by a patient. Each night healthcare facilities take a census of patients in each bed. The census is kept by bed type (Acute Respiratory Care, Burn, Coronary Care, Intensive Care, Intensive Care – Newborn Nursery, Perinatal, Pediatric, Rehabilitation Center, and Unspecified General Acute Care). The GAC Census Days are the sum of the census for each of the nine GAC bed designations. A similar number is obtained for Long-Term Care Facilities.

[4] 5% of the RN workforce is at LTC facilities, while 64% of the RN workforce is at GACs.

[5] The scale factor is 0.08. This number is the percent of the workforce at LTC facilities, in our function. It is derived from 5 (percent of nurses employed at LTC facilities) / 64 (percent of nurses employed at GACs).

[6] CA Workforce Initiative, Center for Health Professions, UCSF. 2001. *Nursing in CA: A Workforce Crisis.*

Numbers. Other methodological approaches were explored by OSHPD staff and were indicated in a separate report on March 9, 2009, "Registered Nurse Shortage Area Alternative Methodologies."

Assessment

A report prepared by University of Californa, San Francisco; "Survey of Nurse Employers in California, Fall 2013" was reviewed. In addition, Labor Market Information from California Employment Development Department was reviewed for the reported percentages of Registered Nurses by Industry Title. The review of these reports would not change the adopted approach for registered nurse shortage areas. The results from the last adopted approach are displayed in a separate memo, "Registered Nurse Shortage Area Update" on April 21, 2011.

Results

This analysis was performed by using the current methodology of counties as the analytical unit. The mean ratio for counties was 39.89. In the county analysis, 26 counties were designated as RNSAs. There were no changes in RNSA designations from the prior update.

Alpine County and Sierra County are automatically designated since there are no counts for Long-Term Care Facilities (LTCs) or General Acute Care Hospitals (GACs). (See map on page 7)

Table 1 illustrates the RNSA listed alphabetically by county, where *LTCPatient* is the patient days for long-term care facilities, *GACCensus* is the patient census days for general acute care hospitals, *BRNCount* is the number of registered nurses per county from the BRN, *Ratio* is the ratio of each county derived from the Ratio Equation, and *Designated* is whether that particular county has been designated according to the mean. The mean is calculated by the sum of the ratio for each county divided by 58; the number of counties in California. Table 2 on Page 5 ranks the counties by ratio. A map is also included on Page 7 to show the county designations.

Table 1 – RNSA Listed Alphabetically by County; Mean Designation Cutoff >39.89

County	LTCPATIENT	GACCensus	BRNCount	RATIO	DESIGNATED
Alameda	1,642,305	504,651	14,417	44.12	YES
Alpine	0	0	13	0.00	YES
Amador	42,565	8,230	311	37.41	NO
Butte	367,668	125,830	2,575	60.29	YES
Calaveras	31,285	4,397	479	14.40	NO
Colusa	32,149	2,393	56	88.66	YES
Contra Costa	925,966	317,063	12,422	31.49	NO
Del Norte	22,580	7,286	235	38.69	NO
El Dorado	86,996	27,982	2,381	14.68	NO
Fresno	958,505	367,436	8,566	51.85	YES
Glenn	25,784	537	109	23.85	NO
Humboldt	135,952	44,459	1,451	38.14	NO

County	LTCPATIENT	GACCensus	BRNCount	RATIO	DESIGNATED
Imperial	46,077	39,621	949	45.63	YES
Inyo	36,135	2,409	203	26.11	NO
Kern	529,114	289,588	5,616	59.10	YES
Kings	93,264	40,696	949	50.75	YES
Lake	78,009	12,000	481	37.92	NO
Lassen	26,422	4,570	233	28.69	NO
Los Angeles	12,065,068	4,418,543	76,796	70.10	YES
Madera	134,652	95,942	921	115.87	YES
Marin	299,136	74,758	3,564	27.69	NO
Mariposa	0	524	134	3.91	NO
Mendocino	80,551	20,490	769	35.02	NO
Merced	229,056	46,721	1,278	50.90	YES
Modoc	0	723	53	13.64	NO
Mono	0	1,478	119	12.42	NO
Monterey	327,126	126,883	3,017	50.73	YES
Napa	234,837	50,103	2,333	29.53	NO
Nevada	121,490	21,525	1,122	27.85	NO
Orange	2,195,614	1,088,355	27,582	45.83	YES
Placer	342,250	161,011	5,590	33.70	NO
Plumas	16,959	2,739	176	23.27	NO
Riverside	1,302,402	666,649	18,705	41.21	YES
Sacramento	1,141,900	628,661	13,416	53.67	YES
San Benito	0	7,340	363	20.22	NO
San Bernardino	1,481,229	830,569	18,478	51.36	YES
San Diego	2,779,761	1,229,048	31,628	45.89	YES
San Francisco	379,048	502,334	7,952	66.98	YES
San Joaquin	874,268	196,189	5,398	49.30	YES
San Luis Obispo	272,729	68,080	3,083	29.16	NO
San Mateo	362,850	187,522	8,771	24.69	NO
Santa Barbara	342,132	131,940	3,022	52.72	YES
Santa Clara	1,548,351	709,147	15,212	54.76	YES
Santa Cruz	249,052	66,806	2,920	29.70	NO
Shasta	258,947	103,312	2,313	53.62	YES
Sierra	0	0	32	0.00	YES
Siskiyou	19,079	7,776	398	23.37	NO
Solano	272,335	124,387	5,870	24.90	NO
Sonoma	487,827	128,349	5,386	31.08	NO
Stanislaus	581,051	259,328	4,463	68.52	YES
Sutter	135,597	7,427	788	23.19	NO
Tehama	36,238	8,724	335	34.70	NO

County	LTCPATIENT	GACCensus	BRNCount	RATIO	DESIGNATED
Trinity	0	2,078	72	28.86	NO
Tulare	479,656	115,367	3,220	47.75	YES
Tuolumne	68,653	19,212	635	38.90	NO
Ventura	535,390	242,248	7,762	36.73	NO
Yolo	240,744	17,430	1,493	24.57	NO
Yuba	27,584	46,931	391	125.67	YES

Table 2 – RNSA Listed by Ratio (for Counties); Mean Designation Cutoff >39.89

County	LTCPATIENT	GACCensus	BRNCount	RATIO	Designated
Yuba	27,584	46,931	391	125.67	YES
Madera	134,652	95,942	921	115.87	YES
Colusa	32,149	2,393	56	88.66	YES
Los Angeles	12,065,068	4,418,543	76,796	70.10	YES
Stanislaus	581,051	259,328	4,463	68.52	YES
San Francisco	379,048	502,334	7,952	66.98	YES
Butte	367,668	125,830	2,575	60.29	YES
Kern	529,114	289,588	5,616	59.10	YES
Santa Clara	1,548,351	709,147	15,212	54.76	YES
Sacramento	1,141,900	628,661	13,416	53.67	YES
Shasta	258,947	103,312	2,313	53.62	YES
Santa Barbara	342,132	131,940	3,022	52.72	YES
Fresno	958,505	367,436	8,566	51.85	YES
San Bernardino	1,481,229	830,569	18,478	51.36	YES
Merced	229,056	46,721	1,278	50.90	YES
Kings	93,264	40,696	949	50.75	YES
Monterey	327,126	126,883	3,017	50.73	YES
San Joaquin	874,268	196,189	5,398	49.30	YES
Tulare	479,656	115,367	3,220	47.75	YES
San Diego	2,779,761	1,229,048	31,628	45.89	YES
Orange	2,195,614	1,088,355	27,582	45.83	YES
Imperial	46,077	39,621	949	45.63	YES
Alameda	1,642,305	504,651	14,417	44.12	YES
Riverside	1,302,402	666,649	18,705	41.21	YES
Tuolumne	68,653	19,212	635	38.90	NO
Del Norte	22,580	7,286	235	38.69	NO
Humboldt	135,952	44,459	1,451	38.14	NO
Lake	78,009	12,000	481	37.92	NO
Amador	42,565	8,230	311	37.41	NO
Ventura	535,390	242,248	7,762	36.73	NO
Mendocino	80,551	20,490	769	35.02	NO

County	LTCPATIENT	GACCensus	BRNCount	RATIO	Designated
Tehama	36,238	8,724	335	34.70	NO
Placer	342,250	161,011	5,590	33.70	NO
Contra Costa	925,966	317,063	12,422	31.49	NO
Sonoma	487,827	128,349	5,386	31.08	NO
Santa Cruz	249,052	66,806	2,920	29.70	NO
Napa	234,837	50,103	2,333	29.53	NO
San Luis Obispo	272,729	68,080	3,083	29.16	NO
Trinity	0	2,078	72	28.86	NO
Lassen	26,422	4,570	233	28.69	NO
Nevada	121,490	21,525	1,122	27.85	NO
Marin	299,136	74,758	3,564	27.69	NO
Inyo	36,135	2,409	203	26.11	NO
Solano	272,335	124,387	5,870	24.90	NO
San Mateo	362,850	187,522	8,771	24.69	NO
Yolo	240,744	17,430	1,493	24.57	NO
Glenn	25,784	537	109	23.85	NO
Siskiyou	19,079	7,776	398	23.37	NO
Plumas	16,959	2,739	176	23.27	NO
Sutter	135,597	7,427	788	23.19	NO
San Benito	0	7,340	363	20.22	NO
El Dorado	86,996	27,982	2,381	14.68	NO
Calaveras	31,285	4,397	479	14.40	NO
Modoc	0	723	53	13.64	NO
Mono	0	1,478	119	12.42	NO
Mariposa	0	524	134	3.91	NO
Alpine	0	0	13	0.00	YES
Sierra	0	0	32	0.00	YES

Recommendation

Since the development and implementation of the current RNSA methodology, there has not been a formal method of measuring the nursing shortage. Staff recommends the continued use of the current methodology using the county mean as the analytical unit and adoption of this paper as a formal motion, thereby revising the list of designated RNSAs.

Registered Nurse Shortage Areas (RNSAs) by County
Using the Mean as the Analytical Unit

Legend:
- Designated RNSA
- Designated RNSA-No Facilities
- No Designation

Sources: Board of Registered Nursing data 2013.
OSHPD Long Term Care and General Acute Care Hospital
Patient Days data 2013.

Note: The RNSA is updated annually; therefore, counties may
gain or lose their designation status with each update.

November 2014

OSHPD
Office of Statewide Health
Planning and Development